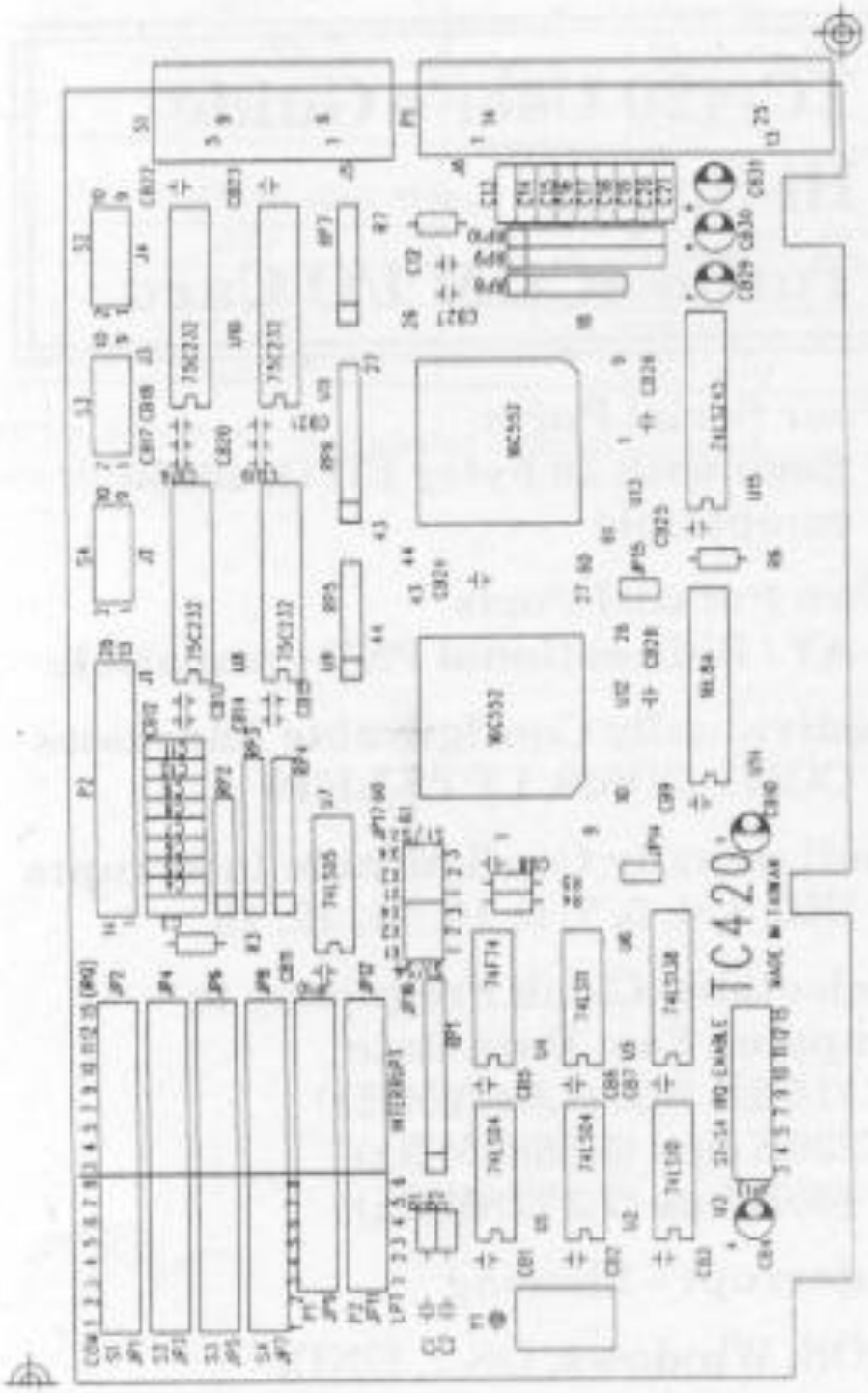
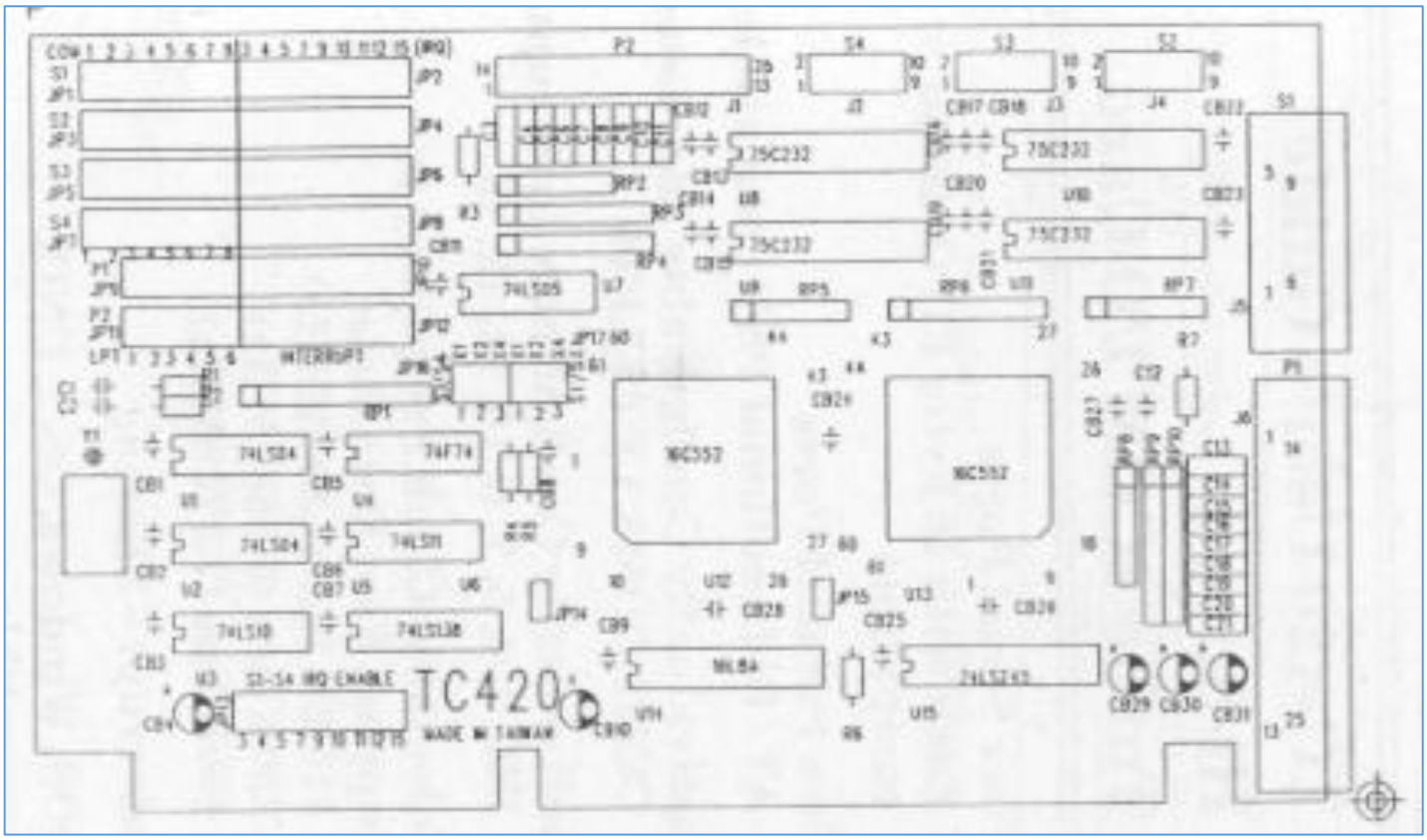
TC-420 User's Guide
Hi-Speed
Turbo 4COM I/O Card

* **Four Serial Ports**
  - **Each with 16 bytes FIFO, 16550 compatible**
* **Two Parallel Ports**
  - **AT / Bidirectional PS/2 compatible**
* **Individually Configurable Addresses**
  - **COM1-COM8, LPT1-LPT6**
* **Individually Configurable Interrupts**
  - **IRQ 3, 4, 5, 7, 9, 10, 11, 12, 15**
* **Selectable Clock Frequency to Support Fast Data Rate**
  - **115.2K bps (1.8432MHz)**
  - **230K bps (3.6864MHz)**
  - **460K bps (7.3728MHz)**
* **Interrupt – Sharing**
* **DOS, Windows, OS/2, UNIX Compatible**



Board Layout


TC420
MADE IN TAIWAN
74LS05
74LS04
74F74
74LS11
74LS10
74LS138
74LS243
75C232
16C552
SI-14 IRQ ENABLE

TC-420 Turbo 4COM I/O
Four Turbo Serial Ports
Two Bidirectional Parallel Ports
Interrupt Sharing

INTRODUCTION:

TC-420 TURBO 4COM I/O is a 16-bit ISA bus I/O card with four 16550 buffered serial ports (S1 to S4) & two bidirectional parallel ports (P1 to P2).

TC-420 is highly flexible with the selection of port address and IRQ. The serial ports are configurable to any of eight different port addresses from COM1-COM8. The two bidirectional parallel ports are configurable to any of six different port addresses from LPT1-LPT6. The versatile interrupt feature provides nine IRQ slections of IRQ3, 4, 5, 7, 9, 10, 11, 12, 15. The card also supports interrupt sharing function to allow the serial ports to use the same IRQ.

TC-420 provides three selectable frequency to support turbo baud rate. It provides the choices of 1.8432MHz(X1), 3.6864MHz(X2) and 7.3728MHz(X4) on each serial port to support 115.2K/230K/460.8K bps respectively.

The following table shows the Baud Rate Generator Programming table:

16*CLOCK DIVISOR "Decimal"	1.8432MHz Baud Rate	3.6864MHz Baud Rate	7.3728MHz Baud Rate
2304	50	100	200
1536	75	150	300
768	150	300	600
384	300	600	1200
192	600	1200	2400
96	1200	2400	4800
48	2400	4800	9600
24	4800	9600	19.2K
16	7200	14.4K	28.8K
12	9600	19.2K	38.4K
6	19.2K	38.4K	76.8K
3	38.4K	76.8K	153.6K
2	57.6K	115.2K	230.4K
1	115.2K	230.4K	460.8K

FEATURES:

* 16 bytes transmit FIFO and 16 bytes receive FIFO with error flags on four serial ports. The 16 bytes FIFO allows greater latency time in interrupt servicing when using in a multitasking environment.
* Four programmable serial input/output channels, software compatible with NS16C550A.
* Supports MODEM control signals. (CTS*, RTS*, DSR*, DTR*, RI*, CD*).
* Individually configurable COM1 to COM8 on four serial ports [port address at 3F8H(COM1), 2F8H(COM2), 3E8H(COM3), 2E8H(COM4), 2F0H(COM5), 3E0H(COM6), 2E0H(COM7), 260H(COM8)].
* Individually configurable interrupts (IRQ3, 4, 5, 7, 9, 16 bit interrupts IRQ10, 11, 12, 15) for four serial ports.
* Two centronics/bidirectional PS/2 compatible parallel ports.
* Individually configurable LPT1 to LPT6 on two parallel ports [port address at 3BCH(LPT1), 378H(LPT2), 278H(LPT3), 268H(LPT4), 27CH(LPT5), 26CH(LPT6)].
* Individually configurable interrupts (IRQ3, 4, 5, 7, 9, 16 bit interrupts IRQ10, 11, 12, 15) for two parallel ports.
* Serial port supports Interrupt-Sharing: allows several ports to utilize the same IRQ.
* Selectable three frequency of 1.8432MHz(X1), 3.6864MHz(X2), 7.3728MHz(X4) for operation clock to support 115.2K/230.4K/460.8K bps respectively.
* DOS / Windows 3.X / WIW / NT / OS2 / UNIX compatible, no software drivers needed.
* All functions can be disabled by jumpers.
* Host interface: IBM PC/AT or compatibles.
* Form factor: 175mm * 100mm.

CABLES:

* Secondary serial port DB-9 pin male type serial port plus third serial port DB-25 pin male type serial port.
* Fourth serial port DB-9 pin male type serial port plus DB-25 pin female type parallel ports.

CONFIGURATION:

I/O ADDRESS

SERIAL PORT ADDRESS:

PORT ADDRESS	NORMAL VALUE
3F8H - 3FFH	COM 1
2F8H - 2FFH	COM 2
3E8H - 3EFH	COM 3
2E8H - 2EFH	COM 4
2F0H - 2F7H	COM 5
3E0H - 3E7H	COM 6
2E0H - 2E7H	COM 7
260H - 267H	COM 8

PARALLEL PORT ADDRESS:

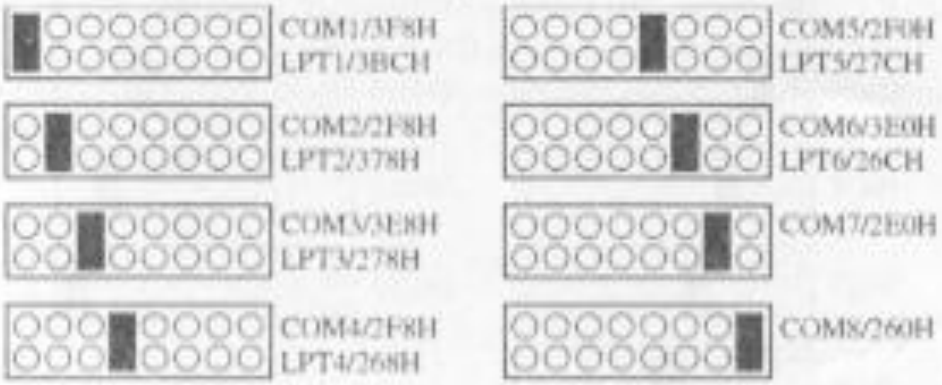
PORT ADDRESS	NORMAL VALUE
3BCH-3BEH	LPT 1
378H-37AH	LPT 2
278H-27AH	LPT 3
268H-26AH	LPT 4
27CH-27EH	LPT 5
26CH-26EH	LPT 6

PORT ADDRESS JUMPER SETTING:

There are six address jumper fields, one for each port. They form the left column of jumper fields labeled "S1" to "P2" on the left side of the board.

Each jumper field relates to one port. The address jumper settings are done alike for all ports.

Possible jumper setting for each port:



TC420 TURBO 4COM I/O card will be delivered with the following I/O address configuration:

PHYSICAL	LOGICAL
S1	COM1
S2	COM2
S3	COM3
S4	COM4
P1	LPT2
P2	LPT3

I/O PORT INTERRUPT
INTERUPT SETTING

INTERRUPT	NORMAL VALUE
IRQ3	COM2 and COM4
IRQ4	COM1 and COM3
IRQ5	LPT3
IRQ7	LPT2
IRQ9	free
IRQ10	free
IRQ11	free
IRQ12	free
IRQ15	free

PORT INTERRUPT JUMPER SETTING:

There are six interrupt jumper fields, one for each port. They form the right column of jumper fields labeled: INTERRUPT "S1" to "P2" on the left side of the board.

Each jumper field relates to one port. The interrupt jumper settings are done alike for all ports.

Possible jumper setting for each port:

IRQ3

IRQ4

IRQ5

IRQ7

IRQ9

IRQ10

IRQ11

IRQ12

IRQ15

TC420 TURBO 4COM I/O card will be delivered with the following interrupts configuration:

PHYSICAL	INTERRUPT
S1	IRQ4 (shared)
S2	IRQ3 (shared)
S3	IRQ4 (shared)
S4	IRQ3 (shared)
P1	IRQ7
P2	IRQ5

SERIAL PORT INTERRUPT ENABLE:

All used interrupts for serial port must be enabled. This is done with the S1-S4 IRQ Enable jumper field just below all interrupt jumper fields. For each used interrupt a jumper at the corresponding position in the interrupt enable jumper field must be set.

TC420 TURBO 4COM I/O card will be delivered with the following interrupts enable configuration:

INTERRUPT	CONNECTED
IRQ3	yes
IRQ4	yes
IRQ5	no
IRQ7	no
IRQ9	no
IRQ10	no
IRQ11	no
IRQ12	no
IRQ15	no

PRINTER PORT BIDIRECTIONAL ENABLE JUMPER SETTING:

Both parallel ports can be configured to normal AT-style or PS/2-style bidirectional (input and output) mode. Close the corresponding BiDir jumper (JP15 for P1, JP14 for P2) to configure the parallel port for unidirection normal mode, and to open the jumper for bidirectional mode.

SERIAL PORT OPERATION CLOCK SELECT:

(A) S1/S2 Frequency select (JP17):

JP17	Frequency
close 1 (X1)	1.8432MHz
close 2 (X2)	3.6864MHz
close 3 (X4)	7.3728MHz

(B) S3/S4 Frequency select (JP16):

JP17	Frequency
close 1 (X1)	1.8432MHz
close 2 (X2)	3.6864MHz
close 3 (X4)	7.3728MHz

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